

What is Claimed is:

1. A glucose monitoring system, comprising:

a sensor configured to periodically detect a glucose level over a predetermined time period;

5 a transmitter operatively coupled to the sensor for transmitting the periodically detected glucose level; and

a receiver operatively coupled to the transmitter for receiving the periodically detected glucose level, the receiver including an output unit for outputting a signal related to the periodically detected glucose level.

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2. The system of claim 1 wherein the output unit of the receiver includes a display for displaying an output corresponding to the periodically detected glucose level.

15 3. The system of claim 2 wherein the displayed output includes an alphanumeric data corresponding to the periodically detected glucose level.

4. The system of claim 3 wherein the alphanumeric data includes one or more of a high glucose level indicator, a low glucose level indicator, an impending hyperglycemic state indicator, an impending hypoglycemic state indicator, and a numeric value of the periodically
20 detected glucose level.

5. The system of claim 4 wherein the high glucose level indicator corresponds to a periodically detected glucose level exceeding an upper predetermined glucose level, and the low glucose level indicator corresponds to a periodically detected glucose level below a
25 lower predetermined glucose level.

6. The system of claim 5 wherein the lower predetermined glucose level approximately corresponds to 70 mg/dL of periodically detected glucose level, and the upper predetermined glucose level approximately corresponds to 250 mg/dL of periodically detected glucose level.
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7. The system of claim 2 wherein the displayed output includes a graphical representation corresponding to the periodically detected glucose level.

8. The system of claim 2 wherein the displayed output of the periodically detected glucose level includes a composite indicator.
- 5 9. The system of claim 8 wherein at least a portion of the composite indicator includes a directional arrow corresponding to the periodically detected glucose level.
10. The system of claim 7 wherein the graphical representation corresponding to the periodically detected glucose level includes an output graph corresponding to the periodically
10 detected glucose level over a predetermined period of time.
11. The system of claim 10 wherein the output graph includes one or more of a line graph, a bar graph, a pie chart, a three-dimensional graph, and a curve graph.
- 15 12. The system of claim 10 wherein the predetermined period of time includes one of a 72 hour period, a 48 hour period, a 24 hour period, a 12 hour period, a 6 hour period, and a one hour period.
13. The system of claim 10 wherein the predetermined period of time includes a time
20 period of no more than 72 hours and no less than one minute.
14. The system of claim 7 wherein the graphical representation corresponding to the periodically detected glucose level includes a rate of change in the periodically detected glucose level over a predetermined time period.
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15. The system of claim 7 wherein the graphical representation corresponding to the periodically detected glucose level includes a rate of acceleration in the periodically detected glucose level over a predetermined time period.
- 30 16. The system of claim 2 wherein the output displayed includes a time information corresponding to the estimated value of the periodically detected glucose level exceeding a predetermined upper glucose level or falling below a predetermined lower glucose level.

17. The system of claim 16 wherein the time information is determined based on a rate of change in the periodically detected glucose level.

5 18. The system of claim 16 wherein the predetermined upper glucose level corresponds to a hyperglycemic condition, and wherein the predetermined lower glucose level corresponds to a hypoglycemic condition.

10 19. The system of claim 1 wherein the output unit of the receiver includes a speaker for outputting an audio signal corresponding to the periodically detected glucose level.

20. The system of claim 19 wherein the audio signal is configured to be output when the periodically detected glucose level exceeds a threshold value.

15 21. The system of claim 20 wherein the threshold value includes a predetermined upper glucose level or a predetermined lower glucose level.

20 22. The system of claim 21 wherein the predetermined upper glucose level includes a detected glucose level corresponding to one or more of an impending hyperglycemic condition, and a hyperglycemic condition, and wherein the predetermined lower glucose level includes a detected glucose level corresponding to one or more of an impending hypoglycemic condition, and a hypoglycemic condition.

25 23. The system of 21 wherein the predetermined upper and lower glucose levels are user defined.

24. The system of claim 19 wherein the output audio signal corresponds to a rate of change of the periodically detected glucose level.

30 25. The system of claim 24 wherein the rate of change of the periodically detected glucose level includes one or more of a rate of increase of the periodically detected glucose level and a rate of decrease of the periodically detected glucose level.

26. The system of claim 24 wherein the output audio signal level is configured to vary in accordance with the rate of change of the periodically detected glucose level.
- 5 27. The system of claim 24 wherein the output audio signal level is configured to either gradually increase or decrease with the rate of change of the periodically detected glucose level.
28. The system of claim 1 wherein the output unit includes a display, the display
10 including one of a cathode ray tube display, an LCD display, and an LED display.
29. The system of claim 28, wherein the display is one of monochromatic and polychromatic.
- 15 30. The system of claim 19 wherein the speaker is configured to be in a muted state.
31. The system of claim 1 further including a remote terminal, wherein the receiver is further configured to transmit said signal related to the periodically detected glucose level to the remote terminal.
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32. The system of claim 31 wherein said remote terminal is located with a healthcare provider.
33. The system of claim 31 wherein said remote terminal is configured to transmit one or
25 more remote terminal signals to said receiver.
34. The system of claim 33 wherein said one or more remote terminal signals includes one or more of a glucose level control signal, a transmitter control signal, a receiver control signal, and a calibration signal.
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35. A glucose monitoring method, comprising the steps of:
periodically detecting a glucose level over a predetermined time period;

transmitting the periodically detected glucose level; and
outputting a signal related to the periodically detected glucose level.

36. The method of claim 35 further including the step of displaying the periodically
5 detected glucose level over said predetermined time period.

37. The method of claim 35 further including the step of transmitting said signal to a
remote terminal.

10 38. The method of claim 37 wherein said remote terminal is located with a healthcare
provider.

39. The method of claim 37 further including the step of receiving one or more remote
terminal signals.

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40. The method of claim 39 wherein said one or more remote terminal signals includes
one or more of a glucose level control signal, a transmitter control signal, a receiver control
signal, and a calibration signal.

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